

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 7,631,505 B2

APPLICATION NO.: 10/581,962

ISSUE DATE : December 15, 2009

INVENTOR(S) : Eric Seitz et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, item (73) should read as follows:

(73) Assignees: Sumitomo Heavy Industries, Ltd.,
Tokyo (JP); Sumitomo (SHI)
Cryogenics of America, Inc.,
Allentown, PA (US)

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Katten Muchin Rosenman LLP
575 Madison Avenue
New York, NY 10022-2585

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor : Eric Seitz et al.
U. S. Patent No. : 7,631,505 B2
Serial No. : 10/581,962
Issued : December 15, 2009
For : WEARLESS VALVE FOR...

March 29, 2010

Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR A CERTIFICATE OF CORRECTION

SIR:

We request a Certificate of Correction to correct the following error below:

Assignees, was incorrectly listed as **“Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)”** instead of **“Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)”** Please change the same to read: **Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)**

Attached, please find a copy of the front page of the Patent.

Any fee due as a result of this paper, may be charged to Deposit account No. 50-1290.

Respectfully submitted,

/ Pedro Carlos Fernandez /

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Docket No.: ISHI 21.053(334786-00027)



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(12) **United States Patent**
Seitz et al.

(10) **Patent No.:** US 7,631,505 B2
(45) **Date of Patent:** Dec. 15, 2009

(54) **WEARLESS VALVE FOR
CRYOREFRIGERATOR**

(75) **Inventors:** Eric Seitz, Macungie, PA (US); Jin Lin Gao, Allentown, PA (US); Ralph C. Longworth, Allentown, PA (US); Mingyao Xu, Emmaus, PA (US)

(73) **Assignees:** Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 472 days.

(21) **Appl. No.:** 10/581,962

(22) **PCT Filed:** Mar. 8, 2005

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§ 371 (c)(1),
(2), (4) **Date:** Jun. 6, 2006

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PCT Pub. Date: Sep. 22, 2005

(65) **Prior Publication Data**
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Related U.S. Application Data

(60) **Provisional application No.** 60/551,154, filed on Mar. 8, 2004.

(51) **Int. Cl.**
F25B 9/00 (2006.01)
F16K 31/02 (2006.01)
F16K 5/00 (2006.01)

(52) **U.S. Cl.** 62/6; 251/129.11; 251/304

(58) **Field of Classification Search** 62/6;
251/129.11, 304
See application file for complete search history.

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Primary Examiner—William C Doerrler

(74) *Attorney, Agent, or Firm*—Katten Muchin Rosenman LLP

(57) ABSTRACT

An improved method of reducing wear dust and torque required to turn a multi-port rotary disc valve utilizes a thrust bearing to hold the valve seat and/or valve disc such that they are not in contact with each other, or have light contact each other.

5 Claims, 10 Drawing Sheets

